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Get to Know Vitamin D

The sunshine vitamin

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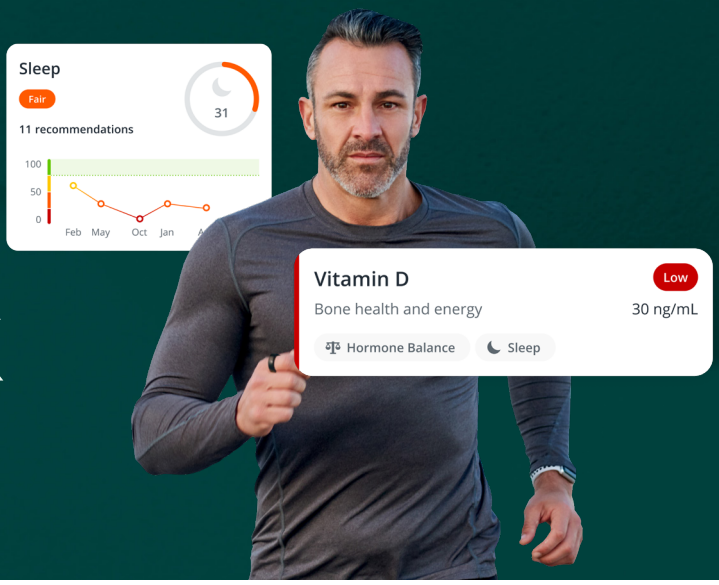
About this eBook



We've created this comprehensive eBook so you can learn more about the many benefits of vitamin D. You'll discover vitamin D's role in health and immunity, how you can optimize your vitamin D levels, and ten delicious recipes packed with vitamin D.

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Why Do We Need Vitamin D?

- **Improves bone health along with calcium.**

  Strong bones protect our hearts and lungs, and anchor our muscles. Vitamin D maintains healthy and strong bones by helping the body absorb calcium. Together, these two nutrients also help protect you from bone-related diseases like osteoporosis later in life.

- **Increases muscle mass and strength.**

  Muscles need vitamin D to move. For example, nerves need the vitamin in order to carry messages between the brain and every body part. Futhermore, studies show that vitamin D acts directly on muscle to increase protein synthesis, which can lead to an increase in muscle mass and a decrease in the rate of muscle fiber degradation.

- **Supports the immune system and protects against certain diseases.**

  The immune system needs vitamin D to fight off invading bacteria and viruses. If your vitamin D is low, your immune system may be less effective. Scientists have discovered that vitamin D is essential in activating our immune defenses and that without enough intake of the vitamin, our immune cells may not be able to fight off serious infections in the body.

- **Helps to regulate sleep.**

  Blood vitamin D concentrations appear to play a role in a restful night's sleep. Low blood levels of vitamin D are associated with decreased sleep time, decreased sleep efficiency, and increased daytime sleepiness.

- **Plays an integral role in other bodily processes.**

  The development and maintenance of the nervous system requires vitamin D, and a lack of adequate vitamin D is associated with a greater incidence of depression and irritability. Testosterone, weight maintenance, and inflammation are also all connected to adequate vitamin D levels.

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How Does Vitamin D Affect Immunity?

- **Modulates white blood cells.**

  Vitamin D has a direct effect on the immune system—it modulates concentrations of many different types of white blood cells, thereby directly influencing your ability to fight off an infection.

- **Protects your respiratory tract.**

  Studies show that people with optimal vitamin D concentrations are less likely to experience the common cold and other respiratory tract infections than those with low vitamin D. In a systematic review, vitamin D supplementation appeared to protect individuals from acute respiratory tract infections (aka the common cold). This was especially true for people who were deficient in vitamin D from the onset. More recently, severe vitmain D deficiency was linked to more severe cases of COVID-19.

- **Enhances cellular immunity.**

  Vitamin D enhanes cell's immunity by helping to lower viral replication rates, increasing concentrations of anti-inflammatory cytokines, and reducing inflammation that injures the lining of the lungs, leading to peneumonia.

- **Low vitamin D affects sleep which lowers immunity.**

  Blood vitamin D concentrations appear to impact sleep, which plays a critical role in keeping you healthy. A study of over 56,000 women found that those who got less than 5 hours or more than 9 hours of sleep had a significantly higher risk of pneumonia than those who regularly slept for 8 hours per night. Aim for 7-8 hours of sleep each night.

- **May play a role in mortality.**

  In a recent ecological study, researchers discovered a correlation between severe vitamin D deficiency and mortality rates among individuals with COVID-19.

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Ways To Optimize Vitamin D

- **Test your blood regularly.**

  The best way to know your vitamin D status is through a blood test. InsideTracker blood analysis includes vitamin D and tells you not just whether your levels are normal, but whether they are optimal to promote a healthy body and strong immune system. At InsideTracker, we recommend serum vitamin D levels remain above 32 ng/mL for optimal health. If levels fall below 32 ng/mL, they can be can be easily corrected with a supplement. Checking your blood periodically allows you to adjust your supplement dosage accordingly over time.

- **Get adequate sunshine.**

  Your body naturally makes vitamin D when your skin is exposed to sunlight. However, depending on where you live or how much you protect yourself from the sun (e.g. sunblock), the sun may not always be a consistent source for vitamin D production. To maintain optimal levels, aim for at least 20 minutes of daily, direct sunshine. But remember, sunshine alone cannot typically provide enough vitamin D to lift you from a deficiency.

- **Take a supplement.**

  Vitamin D supplementation is one of the most common InsideTracker recommendations. According to the National Health and Nutrition Examination Survey (NHANES), the majority of Americans are deficient or low in vitamin D. Supplement doses ranging between 1,000-5,000 IU are a safe and adequate way to increase and maintain levels, whereas high doses of 10,000 IU per day for several months may lead to toxicity. Before taking any nutritional supplements, always consult a medical doctor.

- **Eat vitamin D-rich foods.**

  Though it is harder to get enough vitamin D through diet alone, you can incorporate vitamin D-rich foods into your diet to support optimal levels. Fish like halibut, snapper, and sockeye salmon are all great sources. Vegetarian sources include mushrooms and fortified tofu and non-dairy milks. See the next section for vitamin D-rich recipes.

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Vitamin D-Rich Recipes

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Almond Butter & Banana Smoothie

Prep: 5 mins **Cook:** 0 mins **Makes:** 1

Per serving: 370 calories; 22 g fat; 39 g carbohydrates; 17 g protein

INGREDIENTS

- 1 cup unsweetened soy or almond milk, fortified with vitamin D
- 1/2 frozen banana
- 1 tbsp ground flaxsee
- 2 tbsp almond butter
- 1 tsp cinnamon

DIRECTIONS

Add all ingredients to a blender. Blend on high until smoothie is a desirable consistency.

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Yogurt Parfait

Prep: 5 mins **Cook:** 1 mins **Makes:** 1

Per serving: 244 calories; 12 g fat; 33 g carbohydrates; 7 g protein

INGREDIENTS

- 3/4 cup sliced stawberries
- 3/4 cup blueberries
- 1 6 oz container plain yogurt fortified with vitamin D (to make it dairy free, use fortified plant-based yogurt)
- 1 tbsp wheat germ
- 1/3 cup granola
- 2 tsp honey

DIRECTIONS

Combine yogurt and honey in a serving bowl. Stir with a spoon to combine.

Stir in the wheat germ until it is evenly distributed.

Mix in the granola and top the mixture with the strawberries and blueberries.

Whole Wheat Pancakes

Prep: 10 mins **Cook:** 8 mins **Makes:** 4 pancakes

Per 1 pancake: 216 calories; 12.4 g fat; 21.8 g carbohydrates; 6.7 g protein

INGREDIENTS

- 1/2 cup whole wheat pastry flour
- 1/2 tsp baking powder
- 1/4 tsp baking soda
- 1/8 tsp salt
- 2 tsp walnut oil
- 1 egg
- 1/3 cup almond milk fortified with vitamin D
- 1 tbsp peanut butter
- 1 sliced banana

DIRECTIONS

Sift the flour, baking powder, baking soda, and salt through a ne mesh sieve into a bowl. In a separate bowl, whisk the egg, oil, and milk.

Combine the egg and flour mixtures and lightly stir to combin ingredients.

Heat a skillet over medium heat. When hot, take 1/4 cup of batter and pour on to skillet. Cook on each side for 2-4 minutes until it is cooked through.

Repeat until batter is gone.

Top the pancakes with banana and peanut butter.

Oatmeal with Chocolate & Almonds

Prep: 1 min **Cook:** 2 mins **Makes:** 1

Per serving: 357 calories; 18.1 g fat; 46.1 g carbohydrates; 10 g protein

INGREDIENTS

- 1/2 cup rolled oats
- 1 oz slivered almonds
- 1 cup almond milk fortified with vitamin D
- 4 tsp cocoa powder
- 1 banana

DIRECTIONS

Stove Top Cooking: In a small saucepan, combine the oats and milk. Heat over medium heat, stirring constantly, until the mixture is creamy and the milk has been absorbed, approximately 5-10 minutes.

Stir in the cocoa powder and pour the oatmeal into a serving bowl. Top with the sliced banana and serve.

Microwave Cooking: In a microwave safe bowl, combine the oats and milk. Use a bowl that is twice as tall as the oats and milk mixture. Cook on high power for approximately 2 minutes, or until the mixture is creamy and the milk has been absorbed.

Remove the bowl from the microwave and stir in the cocoa powder. Pour the oatmeal into a serving bowl and top with sliced banana. Serve.

One Pan Salmon & Veggie Bake

Prep: 10 mins **Cook:** 25 mins **Makes:** 1

Per serving: 679 calories; 23 g fat; 68 g carbohydrates; 50 g protein

INGREDIENTS

- 6 oz salmon
- 1/2 cup sweet potato
- 1 cup green beans
- 1/4 red onion, sliced
- 1/4 tsp dried dill
- 1/8 tsp salt
- 1/8 tsp black pepper
- 3 lemon slices
- 1 tbsp olive oil
- 1 tbsp lemon juice
- 1 garlic clove

DIRECTIONS

Preheat oven to 400 degrees F.

Line a baking sheet with parchment paper and set aside.

Thinly slice the sweet potato into rounds and place on the baking sheet with green beans and red onion.

Mix together the olive oil, lemon juice, and garlic. Drizzle over the veggies and toss to evenly coat.

Place the salmon in the middle of the veggies on the baking sheet and drizzle with any remaining dressing.

Place the lemon slices over the top of the salmon and sprinkle with dill, salt and pepper.

Place pan in oven and bake for 20 minutes or until veggies are tender.

Simple Stir Fry

Prep: 5 mins **Cook:** 15 mins **Makes:** 1

Per serving (without protein): 170 calories; 13.9 g fat; 11.3 g carbohydrates; 2.9 g protein

INGREDIENTS

- 6 oz protein of choice (chicken, steak, shrimp, or tofu)
- 1/4 cup chopped onion
- 1 clove garlic
- 1/2 cup shredded carrots
- 1 cup baby spinach
- 1/2 cup sliced mushrooms
- 1 tbsp coconut oil

DIRECTIONS

Mince garlic.

Heat the coconut oil in a large frying pan. When melted, saute the mushrooms, onions, and carrots until tender. Add the garlic and saute for 2 minutes. Add in protein of choice. Season with salt and pepper. Cook until browned.

Add the baby spinach and cook until wilted.

Mushroom Barley Risotto

Prep: 10 mins **Cook:** 30 mins **Makes:** 2

Per serving: 587 calories; 21 g fat; 81 g carbohydrates; 22 g protein

INGREDIENTS

- 4 cups vegetable broth
- 1 1/2 tbsp olive oil
- 1 cup pearled barley
- 2 tsp fresh thyme
- 2 bay leaves
- 2 cups mushrooms, diced
- 1 garlic clove, minced
- 2 tbsp fresh parsley

DIRECTIONS

Heat the broth in a saucepan over low heat.

Add 1 tsp olive oil to a saucepan and add the onion. Saute until translucent.

Add the spices, barley, and 1/4 cup of veggie stock and bring to a boil.

Reduce the heat, and simmer until the stock is absorbed. Stir frequently.

Add the rest of the stock 1/4 cup at a time, again allowing the stock to be absorbed before adding the next 1/4 cup. As you wait for the stock to be absorbed, cook the mushrooms.

Add 1 tsp olive oil to a saute pan over medium-high heat. Add the mushrooms and saute until browned. Stir in the garlic and reduce the heat. Cover and cook for ~3 min.

Once both barley and mushrooms are finished cooking, add the ba ley mixture to the mushrooms and stir to combine.

Scrambled Eggs with Feta Cheese

Prep: 6 mins **Cook:** 10 mins **Makes:** 1

Per serving: 374 calories; 31.2 g fat; 5.2 g carbohydrates; 20.2 g protein

INGREDIENTS

- 3 eggs
- 1 tbsp olive oil
- 1/4 cup chopped onion
- 1/4 cup chopped mushrooms
- 2 tbsp feta cheese
- 2 tsp chopped fresh parsley
- 1/4 tsp black pepper

DIRECTIONS

In a medium-sized frying pan, heat the olive oil over medium heat.

When the oil is hot, cook onion until tender. Beat the eggs with water and chopped parsley. Add to pan. Cook about 3/4 of the way and add the mushrooms and feta cheese to the eggs.

Continue until the eggs are cooked though. Top with black pepper.

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Cod Foil Wrap

Prep: 20 mins **Cook:** 15 mins **Makes:** 1

Per serving: 527 calories; 29.7 g fat; 24.2 g carbohydrates; 43.3 g protein

INGREDIENTS

- 6 oz cod
- 1/2 cup potatoes, cubed
- 3/4 cup green beans
- 1/2 clove garlic, minced
- 1 tbsp shallots, minced
- 1/4 cup leeks, chopped, white parts only
- 2 tbsp olive oil
- 1 tbsp reduced sodium soy sauce
- 1 tsp fresh dill weed
- 1/4 tsp dried basil
- 1/8 tsp black pepper

DIRECTIONS

Preheat oven to 450F.

Bring water to a boil in a medium pot. Add potatoes to a steam insert, and steam for 5 minutes. After 5 minutes, keep the potatoes in the steamer, and add the green beans.

Steam for another 5 minutes, then remove.

Combine potatoes, green beans, and leek in a large bowl. Whisk together soy sauce, olive oil, garlic, shallots, dill weed, and basil, and pour over vegetable mixture and stir.

Place cod fillet on a large square of aluminum foil, and top wi h vegetables/sauce. Wrap the foil around the cod to form a closed packet, and place packet on a baking sheet.

Bake for 15 minutes, or until cod is cooked through.

Black Bean Bowl

Prep: 3 mins **Cook:** 7 mins **Makes:** 1

Per serving: 587 calories; 21 g fat; 81 g carbohydrates; 22 g protein

INGREDIENTS

- 2 tsp olive oil
- 2 eggs
- 2/3 cup cooked black beans
- 1/2 avocado
- 1/4 cup salsa
- 1 tsp chopped fresh cilantro
- 1/8 tsp salt

DIRECTIONS

Heat the olive oil in a medium sized frying pan. Once the oil is hot, add the eggs to the pan and scramble. Add in the black beans and salsa.

Top with avocado and fresh cilantro.

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